

CLAIMS

1. A compression encoder which compresses first and second digital image signals having frame rates different from each other, based on a same encoding system, comprising:

 a dividing section which divides the inputted digital image signals into plural macro blocks of orthogonal-transformation blocks;

 a shuffling section which rearranges the macro blocks divided by the dividing section; and

 a compression-encoding section which compression-encodes the digital image signals every macro block unit consisting of plural macro blocks rearranged by the shuffling section, wherein

 the shuffling section rearranges the macro blocks of the first digital image signals, based on a method of rearranging the macro blocks of the second digital image signals.

2. The compression encoder according to claim 1, wherein the shuffling section rearranges the divided macro blocks of the second digital image signals into a layout in which the divided macro blocks of the second digital image signals are arranged mutually in a dispersed position.

3. The compression encoder according to claim 1, wherein the compression-encoding section compression-encodes the first digital image signals having a frame rate of 60 or 59.94 frames/second.

4. The compression encoder according to claim 1, wherein the compression-encoding section compression-encodes the digital image signals, based on a 4 : 2 : 2 format or 4 : 4 : 4 format.

5. The compression encoder according to claim 1, wherein the compression-encoding section compression-encodes the digital image signals according to an interlace format or a progressive format.

6. A compression-encoding method of compressing first and second digital image signals having frame rates different from each other, based on a same encoding system, comprising:

a dividing step of dividing the inputted digital image signals into plural macro blocks of orthogonal-transformation blocks;
a shuffling step of rearranging the macro blocks divided by the dividing step;
and

a compression-encoding step of compression-encoding the digital image signals every macro block unit consisting of plural macro blocks rearranged by the shuffling step, wherein

in the shuffling step, the macro blocks of the first digital image signals are rearranged, based on a method of rearranging the macro blocks of the second digital image signals.

7. The compression-encoding method according to claim 6, wherein in the shuffling step, the divided macro blocks of the second digital image signals are

rearranged into a layout in which the divided macro blocks of the second digital image signals are arranged mutually in a dispersed position.

8. The compression-encoding method according to claim 6, wherein in the compression-encoding step, the first digital image signals having a frame rate of 60 or 59.94 frames/second are compression-encoded.

9. The compression-encoding method according to claim 6, wherein in the compression-encoding step, the digital image signals are compression-encoded, based on a 4 : 2 : 2 format or 4 : 4 : 4 format.

10. The compression-encoding method according to claim 6, wherein in the compression-encoding step, the digital image signals are compression-encoded, according to an interlace format or a progressive format.

11. A recorder which compresses first and second digital image signals having frame rates different from each other, based on a same encoding system, and records the digital image signals compressed, onto a recording medium, comprising:

- a dividing section which divides the inputted digital image signals into plural macro blocks of orthogonal-transformation blocks;
- a shuffling section which rearranges the macro blocks divided by the dividing section, in units of macro block units each including plural macro blocks;
- a compression-encoding section which compression-encodes the digital image signals every macro block unit consisting of plural macro blocks rearranged by the shuffling section; and

a recording section which records the digital image signals compression-encoded by the compression-encoding section, assigning the digital image signals to each track of the recording medium, for every macro block unit, wherein the shuffling section rearranges the macro blocks of the first digital image signals based on the method of rearranging the macro blocks of the second digital image signals.

12. The recorder according to claim 11, wherein the shuffling section forms the macro block units each of those plural macro blocks that are divided by the dividing section and discretely exist in a frame.

13. The recorder according to claim 12, wherein the recording section selects one or more macro block units to be assigned to each track of the recording medium.

14. The recorder according to claim 12, wherein the recording section assigns the macro block units to each track of the recording medium, positioning discretely those macro blocks that are divided by the dividing section and are adjacent to each other.

15. The recorder according to claim 11, wherein the compression-encoding section compression-encodes the first digital image signals having a frame rate of 60 or 59.94 frames/second.

16. The recorder according to claim 11, wherein the compression-encoding section compression-encodes the digital image signals, based on a 4 : 2 : 2 format or 4 : 4 : 4 format.

17. The recorder according to claim 11, wherein the compression-encoding section compression-encodes the digital image signals according to an interlace format or a progressive format.

18. A recording method of compressing first and second digital image signals having frame rates different from each other, based on a same encoding system, and recording the digital image signals compressed, onto a recording medium, comprising:

 a dividing step of dividing the inputted digital image signals into plural macro blocks of orthogonal-transformation blocks;

 a shuffling step of rearranging the macro blocks divided by the dividing step, in units of macro block units each including plural macro blocks;

 a compression-encoding step of compression-encoding the digital image signals every macro block unit consisting of plural macro blocks rearranged by the shuffling step; and

 a recording step of recording the digital image signals compression-encoded by the compression-encoding step, assigning the digital image signals to each track of the recording medium, for every macro block unit, wherein the shuffling step rearranges the macro blocks of the first digital image signals based on the method of rearranging the macro blocks of the second digital image signals

19. The recording method according to claim 18, wherein in the shuffling step, the macro block units are each formed of those plural macro blocks that are

divided by the dividing step and discretely exist in a frame.

20. The recording method according to claim 19, wherein in the recording step, one or more macro block units to be assigned to each track of the recording medium are selected.

21. The recording method according to claim 19, wherein in the recording step, the macro block units are assigned to each track of the recording medium, positioning discretely those macro blocks that are divided by the dividing step and are adjacent to each other.

22. The recording method according to claim 18, wherein in the compression-encoding step, the first digital image signals having a frame rate of 60 or 59.94 frames/second are compression-encoded.

23. The recording method according to claim 18, wherein in the compression-encoding step, the digital image signals are compression-encoded, based on a 4 : 2 : 2 format or 4 : 4 : 4 format.

24. The recording method according to claim 18, wherein in the compression-encoding step, the digital image signals according to an interlace format or a progressive format are compression-encoded.

25. A compression encoder which compresses first and second digital image signals having frame rates different from each other, based on a same encoding system, comprising:

a dividing section which divides the first digital image signals into plural macro

blocks as well as the second digital image signals into plural macro blocks;

 a shuffling section which rearranges the plural macro blocks of the second digital image signals divided by the dividing section, based on a layout of the plural macro blocks of the first digital image signals divided by the dividing section, into a layout of macro blocks which is equivalent to that of the first digital image signals; and

 a compression-encoding section which compression-encodes the digital image signals every macro block unit consisting of plural macro blocks rearranged by the shuffling section.

26. A compression-encoding method of compressing first and second digital image signals having frame rates different from each other, based on a same encoding system, comprising:

 a dividing step of dividing the first digital image signals into plural macro blocks as well as the second digital image signals into plural macro blocks;

 a shuffling step of rearranging the plural macro blocks of the second digital image signals divided by the dividing step, based on a layout of the plural macro blocks of the first digital image signals divided by the dividing step, into a layout of macro blocks which is equivalent to that of the first digital image signals; and

 a compression-encoding step of compression-encoding the digital image signals every macro block unit consisting of plural macro blocks rearranged by the shuffling step.

27. A recorder which compresses first and second digital image signals

having frame rates different from each other, based on a same encoding system, and records the digital image signals compressed, onto a recording medium, comprising:

 a dividing section which divides the first digital image signals into plural macro blocks as well as the second digital image signals into plural macro blocks;

 a shuffling section which rearranges the plural macro blocks of the second digital image signals divided by the dividing section, in units of macro block units each including plural macro blocks, based on a layout of the plural macro blocks of the first digital image signals divided by the dividing section, into a layout of macro blocks which is equivalent to that of the first digital image signals;

 a compression-encoding section which compression-encodes the digital image signals every macro block unit consisting of plural macro blocks rearranged by the shuffling section; and

 a recording section which records the digital image signals, assigning the digital image signals to tracks of the recording medium, for every macro block unit.

28. A recording method of compressing first and second digital image signals having frame rates different from each other, based on a same encoding system, and recording the digital image signals compressed, onto a recording medium, comprising:

 a dividing step of dividing the first digital image signals into plural macro blocks as well as the second digital image signals into plural macro blocks;

 a shuffling step of rearranging the plural macro blocks of the second digital

image signals divided by the dividing step, in units of macro block units each including plural macro blocks, based on a layout of the plural macro blocks of the first digital image signals divided by the dividing step, into a layout of macro blocks which is equivalent to that of the first digital image signals;

a compression-encoding step of compression-encoding the digital image signals every macro block unit consisting of plural macro blocks rearranged by the shuffling step; and

a recording step of recording the digital image signals, assigning the digital image signals to tracks of the recording medium, for every macro block unit.